FOODS AND BEVERAGES

426/29

195. ALCOHOL.
Mashing-
Processes.

1857
①

Hops

RECORDED

97/51

18

A.D. 1857 . . . . N° 2448.

Brewing, &c.

LETTERS PATENT to Elizabeth Burton West, of Kent Terrace, Regent's Park, London, lately of 80, St. Stephen's Green, Dublin, and Eyrecourt, County of Galway, Ireland, for the Invention of "IMPROVEMENTS IN THE MANNER OF PREPARING AND APPLYING MATERIALS USED IN BREWING TO THAT PURPOSE, AND IN THE VARIOUS PROCESSES AND APPARATUS USED IN CONNECTION WITH THE SAME, AND FOR NOVEL APPARATUS CONNECTED WITH THE SAME."—A communication.

Sealed the 19th March 1858, and dated the 21st September 1857.

PROVISIONAL SPECIFICATION left by the said Elizabeth Burton West at the Office of the Commissioners of Patents, with her Petition, on the 21st September 1857.

I, ELIZABETH BURTON WEST, of Kent Terrace, Regent's Park, London, lately of 80, St. Stephen's Green, Dublin, and Eyrecourt, County of Galway, Ireland, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN THE MANNER OF PREPARING AND APPLYING MATERIALS USED IN BREWING TO THAT PURPOSE, AND IN THE VARIOUS PROCESSES AND APPARATUS USED IN CONNECTION WITH THE SAME, AND FOR NOVEL APPARATUS CONNECTED WITH THE SAME," to be as follows:—

These improvements consist in grinding the malt to be brewed from into a mixture of flour (or meal and flour, pollard and bran, or ground husk, (which mixture may be of one or more qualities and degrees of fineness,) and in applying the malt so ground to the manufacture of all sorts of beers, ales, porter, stout, &c., according to the improved process herein described, or any part of it, and by means of the improved and also novel apparatus, or any part of it, herein-after mentioned and referred to. Grinding or milling apparatus is used in the preparation of the malt; and the malt so ground is after having been carefully mashed at different heats and for a certain time, then by degrees slowly simmered (the water used both in the mashing and simmering operations being only moderately heated at first) also for a certain time, until it begins to boil slowly, all this part of the process being conducted by certain rules for ensuring advantageous results in the obtaining of the saccharified extract therefrom, and in a manner which likewise almost entirely prevents losses of liquor or worts by evaporation, by means of improved and also novel apparatus for that purpose. The worts so produced from the malt so treated are then strained, as required, by means of a suitable vessel for that purpose, and the grains, after all worts have been run of, are pressed until nearly dry, so as to obtain from them all or nearly all of any remaining portion of worts or saccharified extract they may retain as soakage; all the worts thus produced can be afterwards boiled, as thought desirable, and hopped in the usual manner; or, as is preferred when this process is to be followed, the hops may be boiled or steamed separately, and the extract therefrom added to the worts, which may be afterwards cooled, fermented, &c., in the usual manner, by any of the ordinary processes now in use, except so far that, if thought desirable, the apparatus for preventing evaporation, herein-before mentioned, may be applied for that purpose during the cooling processes. Ordinary existing brewers' plant can be improved, altered, and adapted, so as to carry out this herein mentioned improved process (or any part of it) to a greater or less degree; and different parts of this said improved process and apparatus may be separately used, and added and adapted with advantage to ordinary existing brewers' plants and processes in brewing, especially the apparatus for preventing evaporation, which consists of a floating cover, which can be made of any size or shape, so as to fit into the vessel to which it is to be applied, and which floats upon the top of the liquid contained therein, rising or falling as the liquid on which it floats rises or falls; and the improved apparatus for pressing and exhausting the grains, which consists of a weight made of suitable shape, so as to let down and fit into a suitable vessel, in which the grains to be exhausted are placed, and which vessel may also be made suitable for straining the worts run from the grains at the same time. Ordinary brewers' coppers and mash tuns, &c., and a variety of other known vessels, commonly used for boiling and straining purposes, can be easily altered, so as to carry out the boiling, mashing, and straining required in this herein described process, and in a variety of ways; also different known kinds of weights, presses, &c., can be adapted for the exhausting of the grains, as well as a variety of milling and grinding apparatus to the preparation of the malt, as herein-before mentioned. Straining of the worts made by this process will be generally required, and the simmering and boiling of the ground malt will be best carried out in coppers. The ground malt may be steamed, if wished, and the hops after boiling can also be pressed in the same manner as the grains; as already herein described, worts could be strained in the boiling copper.

With regard to the different degrees of heat to which the ground or crushed malt is to be subjected in washing, as part of my process, such heats are necessarily regulated by the temperature of the atmosphere; for instance, when the atmospheric temperature is at 76 Fahrenheit, the mash would require less artificial heat to be given to it than when the atmospheric temperature stood at 50 degrees Fahrenheit. The heats for mashing must therefore vary in some degree according to the atmospheric temperature at different times, and must range between those degrees found most suitable to ensure a proper mash in those different circumstances; they must also, of course, vary according to the quality or description of beer being brewed. For mild ale in general I mash at from 145 to 160 degrees, which, if the temperature of the atmosphere be very low, say 32 Fahrenheit, I would increase to 180; for ale intended for long keeping I mash at from 140 to 150 degrees; for porter I mash at from as low as 135 to 145 degrees. The time for perfecting such mashes will vary in some degree according to the aforesaid temperatures of the atmosphere; but one hour will be sufficient when the temperature is high, say 76 Fahrenheit, and nearly one hour and a half, or possibly one hour and three quarters if the temperature be extremely low, say 32 Fahrenheit. Experienced brewers may, however, choose any degree they would choose for making a good first mash, according to circumstances, if brewing by the old system.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Elizabeth Burton West in the Great Seal Patent Office on the 20th March 1858.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, Elizabeth Burton West, of Kent Terrace, Regent's Park, London, lately of 80, Stephen Green, Dublin, and Eyrecourt, County of Galway, Ireland, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twenty-first day of September, in the year of our Lord One thousand eight hundred and fifty-seven, in the twenty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Elizabeth Burton West, Her special licence that I, the said Elizabeth Burton West, my executors, administrators, and assigns, or such others as I, the said Elizabeth Burton West, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "IMPROVEMENTS IN THE MANNER OF PREPARING AND APPLYING MATERIALS USED IN BREWING TO THAT PURPOSE, AND IN THE VARIOUS PROCESSES AND APPARATUS USED IN CONNECTION WITH THE SAME" (a communication), upon the condition (amongst others) that I, the said Elizabeth Burton West, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Elizabeth Burton West, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My said improvements, as far as they relate to preparing the malt or grain to be brewed from, consist in grinding it into a mixture of flour, pollard, and bran, or ground husk, which mixture may be of one or more degrees of fineness, but should be generally ground finer than ordinary brewers' grist in a manner, in fact, to have the malt or grain ground as fine as can be done without losing any of the flour of the malt or grain so treated, and this by means of corn or flour mills of various known descriptions, and then treating it in the manner herein-after described, and of which I will take, as example, the simplest method of carrying out my process, and which will be found most advantageous in ordinary circumstances. The malt or grain, finely ground as described, I then place in my improved washing and simmering pan, my multum in parvo pan as I call it, and which is now called upon to act as a mash tun, having admitted liquor from the boiler at the desired temperature under the strainer or false bottom, which it contains, the malt or grain, according as the liquor by degrees rising through the holes in the false bottom or strainer soaks through and mixes with it, must be carefully mashed, and allowed to stand alternately for the space of about an hour or more, according to the temperature of the weather; the mashing while taking place may be performed in most of the ways now used, except that much less mashing will be required, and the mashing heats lower in proportion than those now required. With regard to the different degrees of heat in mashing, as part of my process, they must vary in some degree, according to the atmospheric temperature at different times, of course, and must range between those degrees found most suitable to ensure a proper mash in these different circumstances. For instance, when the atmospheric temperature is at 76 of Fahrenheit the mash would require less artificial heat than when the atmospheric temperature stood at 50 degrees of Fahrenheit. The heats must also of course vary according to the description or quality of beer being brewed. For mild ale, in general I make it from 145 to 160 degrees, which, if the temperature of the atmosphere be low, I would increase to 180. For ale, intended for long keeping, I make several degrees lower in proportion. For porter, I mash as low as from 135 degrees upwards, according to circumstances. The mashing, however, to be only what is required at intervals to prevent the goods from setting in the mash tun or simmering pan, into which, between every such interval of mashing, my floating cover or anti-evaporation apparatus is to be immediately let down to prevent evaporation or the escape of the ammonia from the goods, on the surface of which it will float. The mashing may take place by means of oars or otherwise, and the quantity of liquor allowed to the goods will of course depend on the quality of the beer to be brewed, but brewers by my process will be saved a great deal of trouble and uncertainty in calculating and allowing for losses by evaporation, waste, &c., as those usual losses will not take place. The goods having thus been mashed sufficiently, and heat being applied in any usual manner, the goods must be allowed to come to a slow simmer by degrees in this same "multum in parvo" pan, which is now called upon to act as a simmering copper, and thus simmer gently for the space of about three hours, the floating covers already mentioned preventing all evaporation or escape of aroma during that time, as desired, the worts being then run into the wort copper to be boiled with the hops (the worts, however, so made requiring very little boiling as necessary). When boiling in the wort copper the floating cover may again be used to prevent the escape of the aroma of the hops as well as of the malt, and also losses of beer by evaporation. As soon as the worts have been run off the grains in the simmering or "multum in parvo" pan the weights may be applied to the grains to recover any soakage of the first strength of beer made, or a second mash may be made in the same manner as the first, simmered for an hour or more, and the weights then applied to recover its soakage or for a return. The weights can be applied to the hops in the wort cover to recover all soakage contained in them in the same manner as they are applied to press the grains in the simmering or multum in parvo pan. The liquor may be admitted into the simmering or multum in parvo pan in various ways, provided so always as not to interfere with the arrangements for the simmering of the goods in it afterwards. The worts when run out of the simmering pan and out of the wort copper will be found to have been properly strained by means of the strainers I employ in each, as already described, and which are something of the same nature as the false bottoms of ordinary mash tuns. The pressing of the hops by my process is strongly recommended when boiled with the worts in the wort copper. In cases where it is desired to heat the simmering or multum in parvo pan by means of pipes made for hot water, they must be so placed round the inside to enter the pan, so as to allow the floating covers to fit. All the worts thus produced may be boiled afterwards, as thought desirable, or as is preferred. Sometimes, when this process is to be followed in other respects, the hops may be boiled separately, and the extract therefrom added to the worts, which may be afterwards cooled, fermented, &c., by any of the ordinary processes now in use, except so far as in any of the after processes where prevention of escape of aroma, &c., be thought desirable, the floating covers may be again applied, or in any existing brewers' plant can be altered and improved, and adapted so as to carry out this my improved process (or any part of it) in a greater or less degree; and different parts of this improved process may be separately used, added, and adapted with advantage to ordinary existing brewers' plant and processes in brewing, especially the floating covers or apparatus for preventing evaporation, which can be made to any size or shape, so as to fit the vessel to which they are to be applied, and which float on the top of the liquid contained therein, rising or falling as the liquid in which it floats rises or falls; and the apparatus for pressing the grains, which consists of a weight made of suitable shape, made so as to let down and fit into either singly or confined with the floating cover into the vessel in which the grains to be pressed are placed, and which vessel may also be made suitable for straining the worts run from the grains at the same time after the goods have been simmered according to my process. Figure 1, of the Drawings hereto annexed, gives one form of apparatus suitable for this purpose, as does Figure 2 of my improved wort copper and hot presser or strainer.

But ordinary brewers' coppers and mash tuns, &c., and a variety of known vessels commonly used for boiling and straining purposes, can be altered so as to carry out the boiling, straining, and mashing necessary in this herein described process, and in a variety of ways; also different kinds of weights, &c., can be adopted for the pressing of the grains, as well as a variety of milling apparatus to the preparation and grinding of the malt or grain. Straining of the worts made by this process can be generally required, and the simmering of the ground malt will be best carried out in coppers. Figure 1, of the Drawings hereunto annexed, shews one form of my multum in parvo pan for simmering, straining, and pressing vessel of the simplest kind; B, B, B, is a copper pan or vessel of any suitable material, which may be heated by furnaces, pipes, or any of the means by which fire, steam, or hot water is usually applied for heating coppers or other vessels, and which may be made of any shape found most convenient for heating, according to circumstances; L is a strainer formed of two plates of perforated metal or wood, with layer of canvas or any suitable fabric of like sort laid between, and supported on ledges or otherwise inside the pan or vessel B, B, B. These ledges or supporters are marked in the Drawings H, H; K, discharge pipe with stop-cock placed in pan B, B, B, and above strainer L; G, pipe with stop-cock for conveying contents of vessel B to vessel C. Figure 2, C, pan or vessel of same description as vessel B; T, strainer placed in pan C, same as strainer L, as already described in vessel B, and supported in same manner. These strainers must be made strong to support the weights which will press upon them; E, pipe and stop-cocks conveying liquor from boiler A to vessel B, under strainer L (but may, if preferred, connect A with B, above strainer L); Z, S, cover of hollow metal or any other suitable materials, strong but made so as to float with edge or top, which must be made with rather wider than the under part, several inches above the service of the liquor on which it floats, and which must be made to fit nearly but not quite closely inside vessels B and C. The lips of the covers must be made thin, or strengthened by bars across to bear the weights X, when lowered upon them; these bars are marked P, P. Y, side view sketch of said covers S, Z, which may be formed, however, of any shape found necessary to fit the vessel in which they may be intended to float as already described; X, weights of any convenient heavy material, and made so as when required to slip down on chains R and press upon the tops of the covers S, Z, inside vessels B and C, over which vessels said covers and weights must for these purposes be suspended. These weights, however, may be placed upon said covers (or if preserved without the covers upon the grains or hops, as the case may be when required to be pressed during the brewing process) by any separate apparatus, and in a variety of known ways; R, chain, rope, &c., by which and on which said weights and covers can be raised or lowered. Windlasses or any description of machinery used for raising heavy weights will be required for raising these weights and covers in very large breweries.

N.B.—(Vessels for carrying on as described this may be ne plus ultra method of brewing, may be placed in any manner most convenient for heating, &c., according to the peculiar circumstances of the brewery in which it may be adopted.

Having thus fully described my said Invention, I also desire it to be understood that I do not confine or limit myself to the exact routine in every respect for conducting a brewery, by my new (or as I still further denominate it, ne plus ultra process), as herein described upon every occasion and under all circumstances in which it may be adopted, as long as the operations are in fact in accordance with the true principle of my said Invention; neither do I bind or limit myself to any particular shape, materials, or size, in the construction of my apparatus, or any part of it, as both my process and apparatus will allow of considerable modifications in carrying out the principle of my Invention with success, in unavoidably differing circumstances, and to a greater or less degree; and I do declare that what I claim as my improvements are,—

First, brewing and brewing with advantageous results from malt or grain, prepared or treated by simmering and straining, and pressing or simmering only, according to my herein-before described new or ne plus ultra process, combined with saving of all losses by evaporation when desired.

Secondly, the construction and application of floating covers or apparatus for preventing evaporation as herein described during all parts of my ne plus ultra process, where it is desirable to do so, and which anti-evaporation apparatus or floating covers, may be applied in all other processes and manufactures on which the prevention of evaporation is desired.

Thirdly, the pressing the grains in the simmering vessel or pan.

Fourthly, the construction and application of a simmering pan or vessel of a description which enables the operations of mashing, straining, simmering, and pressing of the malt or grains to be all carried out in such single vessel, and which I call my multum in parvo pan.

Fifthly, the mashing, simmering, straining, and pressing of the malt or grains all in one single vessel, constructed and invented for the purpose.

Sixthly, the construction and application of weights for pressing the grains in such vessel or vessels, either separately or in conjunction with my novel floating cover or "anti-evaporation apparatus.

Seventhly, the construction and application of the floating covers herein described for preventing evaporation, combined as one single apparatus, with the weights for pressing the hips and grains.

In witness whereof, I, the said Elizabeth Burton West, have hereunto set my hand and seal, this Twentieth day of March, in the year of our Lord One thousand eight hundred and fifty-eight.

ELIZABETH BURTON WEST. (L.S.)

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